

*Al-Qadisiya University
College of Veterinary Medicine*



Sequential postnatal evaluation mRNA Expression level of pituitary, gonadal and extragonadal *GnRH-r*, *IGF-1*, and *IGF-2* genes in inhibin immunized and non-immunized female rats.

A Thesis

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Summary

The present study has been carried out at the department of physiology and pharmacology, College of Veterinary Medicine, Al-Qadisiya University, Iraq to investigate the effect of prepubertal passive immunization against inhibin alpha subunit on serum reproductive hormonal profile and pituitary mRNA expression level of GnRH-r, IGF-I, and IGF-II genes during prepubertal and pubertal ages in female rats.

Fourty immature *Wistar albino* female rats (weighted 21.5 ± 1.32 g., aged 15 days) were randomly assigned into two equal groups; treated and control, received inhibin- antiserum (100 μ l of physiological saline containing 1 μ g antiserum, *i.p.*) and physiological saline (100 μ l, *i.p.*), respectively, in the 15th and 18th days old. Five males from each group were sacrificed in the 23rd, 30th and 45th days old. Body weight was monitored throughout the experimental periods. Blood samples were obtained for assessment of FSH, inhibin-B, LH, activin-A and estrogen using ELISA technique. Pituitary tissue samples were obtained for histophysiological examination and others for evaluation of mRNA expression level of GnRH-r, IGF-I, and IGF-II genes using qRT-PCR.

In all of the experimental periods (23d, 30d and 50d), hormonal assay in sera samples, obtained from anti-inhibin- treated female rats, showed significant increase of FSH, activin-A and estrogen concentrations, and significant decrease of inhibin-B concentration in comparison with control, whereas LH concentration unchanged. Histological findings revealed differences between the pituitary gland morphology in treated group in subgroup 1 (23 day), whereas in others periods (30-d and 50-d), the FSH containing cells in Paris distalis appeared much larger and contain profuse clear eosinophilic cytoplasm with large nuclei. Pituitary of treated male rats showed higher expression level of GnRH-r gene during the studied experimental periods compared with control.

The results of 4th subgroup revealed significant decreasing in the duration of pregnancy in female rats mated with treated males compared with that mated with control males. Male rats passively immunized against inhibin-subunit showed higher fertility rate (represented by percentage of pregnant females which mated with female rats of subgroup 4 from each studied groups), increased litter number per each female and their weights compared with control.

It can be concluded that passive immunization against endogenous circulating inhibin during prepubertal age can perform an important role in sexual maturity and performance in the females after puberty and regulation of pituitary secretion of FSH.